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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/761,702 | 01/21/2004 | Meng-Hung Chen | 10113671 | 3361 |

34283 7590 06/30/2006

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| EXAMINER |
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WARREN, MATTHEW E

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| ART UNIT | PAPER NUMBER |
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2815

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/761,702 | Applicant(s) CHEN, MENG-HUNG | |
| | Examiner Matthew E. Warren | Art Unit 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9,27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>4/14/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the RCE and Amendment filed on April 14, 2006.

Claim Objections

Claim 9 is objected to because of the following informalities: The claim contains the limitation of "the first conductive layer." There is insufficient antecedent basis for this limitation in the claim. It is assumed that the limitation refers to the "tungsten layer or polysilicon layer" in claim 1. Therefore, the examiner will interpret claim 9 to mean that "the tungsten layer or polysilicon layer is about 2000 Å to 4000 Å thick. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-7, 9, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang et al. (US 6,368,952 B1) in view of the Chiang et al. (US 5,817,572)

In re claim 1, Liang et al. shows (fig. 6) a contact structure of a device, comprising; a substrate (10) having a transistor of the device thereon, the transistor having a raised gate electrode (16a), a drain region and a source region (18a, 18b); a

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composite dielectric layer, sequentially having a first dielectric layer (20a), barrier layer (26a), and second dielectric layer (28a), directly on the transistor, the first dielectric layer comprising polyimide (col. 6, lines 7-29) the composite dielectric layer having an opening exposing the drain region; and a tungsten (22a) or polysilicon layer in the opening, wherein the thickness of the first dielectric layer (4000-7000 Å) (col. 6, lines 27-29) is thicker than the second dielectric layer (3000-5000 Å) (col. 9, lines 37-45).

Liang shows all of the elements of the claims except the contact specifically being a bit line contact structure of a memory device. Liang discloses (col. 4, lines 27-45) that the invention pertains to FETs within semiconductor integrated circuits. It is well known that semiconductor FETs may be memory devices (such as DRAMs) that have bit line contact structures. However, Chiang et al. discloses (col. 7, lines 28-37 and col. 12, lines 44-52) that the an inventive contact structure can be used as a bit line contact. The contact is also formed in a memory device. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Liang by using the contact structure as a bit line contact because Chiang teaches that memory devices employ bit line contacts.

In re claims 3-7 and 9, Liang discloses that the first dielectric is 4000 Å thick, that the barrier layer (26) is SiN (col. 7, lines 60-63 and col. 8, lines 57-62), the barrier layer has a thickness of 300 Å (col. 9, lines 1-4), the second dielectric layer (28) comprises an oxide layer (col. 6, lines 7-29 and col. 9, lines 36-45), and that the second dielectric layer is 3000 Å thick (col. 9, lines 36-45). The tungsten layer (22) is 4000 Å because it has the same height as the first PMD layer (20).

In re claims 27 and 28, Liang discloses (col. 6, lines 7-29) that the polyimide is fluorinated (fluorinated polymer). The first dielectric layer is polysilsesquioxane because one of the dielectrics used is a silsesquioxane.

Response to Arguments

Applicant's arguments with respect to claims 1, 3-7, 9, 27, and 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew E. Warren



June 25, 2006